

## REMARKS

The Applicants thank the Examiner for the careful examination of this application and respectfully request the entry of the amendments indicated hereinabove. The Applicants also thank the Examiner for the indication of allowance of Claims 11-20.

Claims 1-34 are pending. Claims 1-10 and 31 are rejected. The Applicants amend Claim 31 and add Claims 35-36 hereinabove.

Independent Claim 1 positively recites a Schottky diode comprising a first metal and a second metal. These advantageously claimed features are not taught or suggested by the patents granted to Tohyama, Wei et al., or Iranmanesh et al.

Tohyama teaches away from the advantageously claimed invention because Tohyama teaches a single metal Schottky diode structure (column 3 lines 25-27, column 7 lines 35-43, column 9 lines 1-3, FIG. 7B); not a dual metal Schottky diode as advantageously claimed. The Applicants respectfully traverse the assertion in the Office Action (page 3) that element 15 is a barrier layer and element 16 is a second metal area in Tohyama. The Applicants respectfully submit that Tohyama's element 15 is for electrical isolation (column 7 lines 44-48,

FIG. 7B), it is not a diffusion barrier layer as advantageously claimed. In addition, the Applicants respectfully submit that Tohyama's element 16 is a shade film that is not part of the Schottky diode (column 7 lines 44-48, FIG. 7B).

Wei et al. teaches away from the advantageously claimed invention because Wei et al. teaches a single metal Schottky diode structure (FIG. 3, column 7 lines 15-28, note that a continuous single-phase silicide film is not possible with two different metals or metal silicides except in rare circumstances); not a dual metal Schottky diode as advantageously claimed. The Applicants respectfully traverse the assertion in the Office Action (pages 3-4) that element 50 is a barrier layer and element 54 is a second metal area in Wei et al. The Applicants respectfully submit that Wei et al.'s element 50 is for electrical isolation (column 7 lines 29-35, FIG. 3); it is not a diffusion barrier layer as advantageously claimed. In addition, the Applicants respectfully submit that Wei et al.'s element 54 is an aluminum film that is not part of the Schottky diode (column 7 lines 36-50, FIG. 3), rather Wei et al.'s element 54 provides an ohmic contact to the Schottky diode 44/46 (i.e. the work function of the metal is less than that of the semiconductor).

Iranmanesh et al. teaches away from the advantageously claimed invention because Iranmanesh et al. teaches a structure having two adjoining single metal Schottky diodes, namely from the emitter to the base and from the collector to the base (FIG. 1, column 3 lines 50-55, column 5 lines 51-62; note that the first single

metal Schottky diode is comprised of elements 52/14 in location 50, while the second single metal Schottky diode is comprised of elements 51/14 in location 30); not a dual metal Schottky diode as advantageously claimed. The Applicants respectfully traverse the assertion in the Office Action (page 4) that element 51 is a second metal area in Iranmanesh et al. The Applicants respectfully submit that Iranmanesh et al.'s element 51 is the metal portion of a single metal Schottky diode column 5 lines 51-56, FIG. 1).

Due to the foregoing reasons, the Applicants respectfully traverse the Examiner's rejection of Claim 1 and respectfully assert that Claim 1 is patentable over Tohyama, Wei et al., and Iranmanesh et al. Furthermore, Claims 2-6 are allowable for depending on allowable independent Claim 1 and, in combination, including limitations not taught or described in the reference of record.

Independent Claim 7 positively recites a Schottky diode comprising a first metal and a second metal. These advantageously claimed features are not taught or suggested by the patents granted to Tohyama, Wei et al., or Iranmanesh et al.

Tohyama teaches away from the advantageously claimed invention because Tohyama teaches a single metal Schottky diode structure (column 3 lines 25-27, column 7 lines 35-43, column 9 lines 1-3, FIG. 7B); not a dual metal

Schottky diode as advantageously claimed. The Applicants respectfully traverse the assertion in the Office Action (page 3) that element 16 is a second metal area in Tohyama. The Applicants respectfully submit that Tohyama's element 16 is a shade film that is not part of the Schottky diode (column 7 lines 44-48, FIG. 7B).

Wei et al. teaches away from the advantageously claimed invention because Wei et al. teaches a single metal Schottky diode structure (FIG. 3, column 7 lines 15-28, note that a continuous single-phase silicide film is not possible with two different metals or metal silicides except in rare circumstances); not a dual metal Schottky diode as advantageously claimed. The Applicants respectfully traverse the assertion in the Office Action (page 4) that element 54 is a second metal area in Wei et al. The Applicants respectfully submit that Wei et al.'s element 54 is an aluminum film that is not part of the Schottky diode (column 7 lines 36-50, FIG. 3), rather Wei et al.'s element 54 provides an ohmic contact to the Schottky diode 44/46 (i.e. the work function of the metal is less than that of the semiconductor).

Iranmanesh et al. teaches away from the advantageously claimed invention because Iranmanesh et al. teaches a structure having two adjoining single metal Schottky diodes, namely from the emitter to the base and from the collector to the base (FIG. 1, column 3 lines 50-55, column 5 lines 51-62; note that the first single metal Schottky diode is comprised of elements 52/14 in location 50, while the

second single metal Schottky diode is comprised of elements 51/14 in location 30); not a dual metal Schottky diode as advantageously claimed. The Applicants respectfully traverse the assertion in the Office Action (page 4) that element 51 is a second metal area in Iranmanesh et al. The Applicants respectfully submit that Iranmanesh et al.'s element 51 is the metal portion of a single metal Schottky diode column 5 lines 51-56, FIG. 1).

Due to the foregoing reasons, the Applicants respectfully traverse the Examiner's rejection of Claim 7 and respectfully assert that Claim 7 is patentable over Tohyama, Wei et al., and Iranmanesh et al. Furthermore, Claims 8-10 are allowable for depending on allowable independent Claim 7 and, in combination, including limitations not taught or described in the reference of record.

Amended independent Claim 31 positively recites an integrated circuit that includes a first dual metal Schottky diode and a second dual metal Schottky diode. These advantageously claimed features are not taught or suggested by the patent granted to Lohstroh. Lohstroh teaches away from the advantageously claimed invention because Lohstroh teaches a structure having two (or possibly more) single metal Schottky diodes (column 4 lines 43-46n integrated circuit); not an integrated circuit containing a first and second dual metal Schottky diode as advantageously claimed.

New Claim 35 depends on Claim 1 and is therefore allowable for the same reasons that Claim 1 is allowable. Furthermore, Claim 35 is allowable on its own merits because it recites additional features of the invention that, in combination with the limitation of Claim 1, are not taught nor suggested by the patents granted to Tohyama, Wei et al., and Iranmanesh et al. Namely, Claim 35 further specifies the additional limitation that the first metal area includes islands comprised of the first metal. The Applicants submit that Tohyama teaches away from this advantageously claimed limitation by teaching the use of a continuous metal film (column 7 lines 49-52) and Wei et al teaches away from this advantageously claimed invention by teaching the use of a continuous metal film (column 7 lines 25-28). In addition, Iranmanesh et al. teaches away from this advantageously claimed invention by teaching the use of a continuous metal layer for both diode structures (column 5 lines 51-62, FIG. 1).

New Claim 36 depends on Claim 7 and is therefore allowable for the same reasons that Claim 7 is allowable. Furthermore, Claim 36 is allowable on its own merits because it recites additional features of the invention that, in combination with the limitation of Claim 7, are not taught nor suggested by the patents granted to Tohyama, Wei et al., and Iranmanesh et al. Namely, Claim 36 further specifies the additional limitation that the first metal area includes islands comprised of the first metal. The Applicants submit that Tohyama teaches away from this advantageously claimed limitation by teaching the use of a continuous metal film

(column 7 lines 49-52) and Wei et al teaches away from this advantageously claimed invention by teaching the use of a continuous metal film (column 7 lines 25-28). In addition, Iranmanesh et al. teaches away from this advantageously claimed invention by teaching the use of a continuous metal layer for both diode structures (column 5 lines 51-62, FIG. 1).

For the reasons stated above, this application is believed to be in condition for allowance. Reexamination and reconsideration is requested.

Respectfully submitted,



Rose Alyssa Keagy  
Attorney for Applicants  
Reg. No. 35,095

Texas Instruments Incorporated  
PO BOX 655474, M/S 3999  
Dallas, TX 75265  
972/917-4167  
FAX - 972/917-4409/4418